Abstract

The main topic that we cover is the modeling of epidemics with multi-groups with interaction between the subgroups. The threshold for the deterministic model is included. The stochastic system corresponding to the determinsitic model is presented. In particular, we formulate a continuous time stochastic process that corresponds to the determinsitic system. We include a study of a fixed number of subgroups including 2, 3, and 10 subgroups. Connection of the model to the specific disease is presented. A numerical approximation of the ordinary differential equations is studied. We further present a data analysis of the stochastic system.